

## WHAT IS CLAIMED IS:

1. An active inductor comprising first and second field effect transistors, each having a source, a gate and a drain, wherein

5           said drain of said first field effect transistor is connected to said source of said second field effect transistor,

          said gate of said first field effect transistor is connected to said drain of said second field effect transistor with no active element interposed therebetween,

          said active inductor further comprising a feedback path provided between said  
10       source of said first field effect transistor and said gate of said second field effect transistor, wherein

          said gate and said source of said second field effect transistor serve as two ports of said active inductor.

15       2. An active inductor comprising first to third field effect transistors, each having a source, a gate and a drain, wherein

          said drain of said first field effect transistor is connected to said source of said second field effect transistor and said gate of said third field effect transistor,

          said gate of said first field effect transistor is connected to said drain of said  
20       second field effect transistor,

          said gate of said second field effect transistor is connected to said drain of said third field effect transistor,

          said active inductor further comprising a feedback path provided between said source of said first field effect transistor and said source of said third field effect  
25       transistor,

said gate and said source of said third field effect transistor serve as two ports of said active inductor.

3. An active inductor comprising first to fourth field effect transistors, each

5 having a source, a gate and a drain, wherein

said drain of said first field effect transistor is connected to said source of said second field effect transistor, said gate of said third field effect transistor and said gate of said fourth field effect transistor,

10 said gate of said first field effect transistor is connected to said drain of said second field effect transistor,

said gate of said second field effect transistor is connected to said drain of said third field effect transistor,

said source of said third field effect transistor is connected to said source of said fourth field effect transistor,

15 said active inductor further comprising a feedback path provided between said source of said first field effect transistor and said drain of said fourth field effect transistor, wherein

said source and said drain of said fourth field effect transistor are set at the same potential,

20 current into a junction between said drain of said fourth field effect transistor and said feedback path and current into a junction between said source of said fourth field effect transistor and said source of said third field effect transistor are set to flow independently of each other,

said gate and said drain of said fourth field effect transistor serve as two ports  
25 of said active inductor.

4. The active inductor according to claim 2, further comprising  
a resistor connected in series to said two ports of said inductor.

5 5. The active inductor according to claim 3, further comprising  
a resistor connected in series to said two ports of said inductor.

6. The active inductor according to claim 1, further comprising  
a field effect transistor for feedback provided on said feedback path, having a  
10 source connected to said source of said first field effect transistor, a gate and a drain  
connected to each other and to one of said two ports of said inductor.

7. The active inductor according to claim 2, further comprising  
a field effect transistor for feedback provided on said feedback path, having a  
15 source connected to said source of said first field effect transistor, a gate and a drain  
connected to each other and to one of said two ports of said inductor.

8. The active inductor according to claim 3 further comprising  
a field effect transistor for feedback provided on said feedback path, having a  
20 source connected to said source of said first field effect transistor, a gate and a drain  
connected to each other and to one of said two ports of said inductor.

9. The active inductor according to claim 4, further comprising  
a field effect transistor for feedback provided on said feedback path, having a source  
25 connected to said source of said first field effect transistor, a gate and a drain connected to

each other and to one of said two ports of said inductor.

10. The active inductor according to claim 5, further comprising  
a field effect transistor for feedback provided on said feedback path, having a

5 source connected to said source of said first field effect transistor, a gate and a drain  
connected to each other and to one of said two ports of said inductor.

11. The active inductor according to claim 1, further comprising  
a resistor for feedback provided on said feedback path.

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12. The active inductor according to claim 2, further comprising  
a resistor for feedback provided on said feedback path.

13. The active inductor according to claim 3, further comprising  
a resistor for feedback provided on said feedback path.

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14. The active inductor according to claim 4, further comprising  
a resistor for feedback provided on said feedback path.

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15. The active inductor according to claim 5, further comprising  
a resistor for feedback provided on said feedback path.